basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATIONS/ NATIONAL SENIOR CERTIFICATE EXAMINATIONS

AGRICULTURAL SCIENCES P2

MAY/JUNE 2024

MARKING GUIDELINES

MARKS: 150

APPROVED

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These marking guidelines consist of 10 pages.

SECTION A

QUESTION 1

1.1	1.1.1	C ✓✓		
	1.1.2	B ✓✓		
	1.1.3	D ✓✓		
	1.1.4	D ✓✓		
	1.1.5	A ✓✓		
	1.1.6	B ✓✓		
	1.1.7	B ✓✓		
	1.1.8	C ✓✓		
	1.1.9	D ✓✓		
	1.1.10	A ✓✓	(10 x 2)	(20)
1.2	1.2.1	D ✓✓		
	1.2.2	H ✓✓		
	1.2.3	E ✓✓		
	1.2.4	J ✓✓		
	1.2.5	B ✓✓	(5 x 2)	(10)
1.3	1.3.1	Price elasticity of demand ✓✓		
	1.3.2	Income statement ✓✓		
	1.3.3	Heterozygote/crossbreed/hybrid ✓✓		
	1.3.4	Quantitative ✓✓		
	1.3.5	Prepotency ✓✓	(5 x 2)	(10)
1.4	1.4.1	Standardisation/grading ✓		
	1.4.2	Variable ✓		
	1.4.3	Epistasis ✓		
	1.4.4	Physical ✓		
	1.4.5	Inbreeding depression/degeneration ✓	(5 x 1)	(5)
			TOTAL SECTION A:	**45**

SECTION B

QUESTION 2: AGRICULTURAL MANAGEMENT AND MARKETING

2.1 Marketing functions

2.1.1 Identification of the marketing function

A Transportation ✓ (1)
B Storage ✓ (1)
C Packaging ✓ (1)

2.1.2 Guidelines for packaging

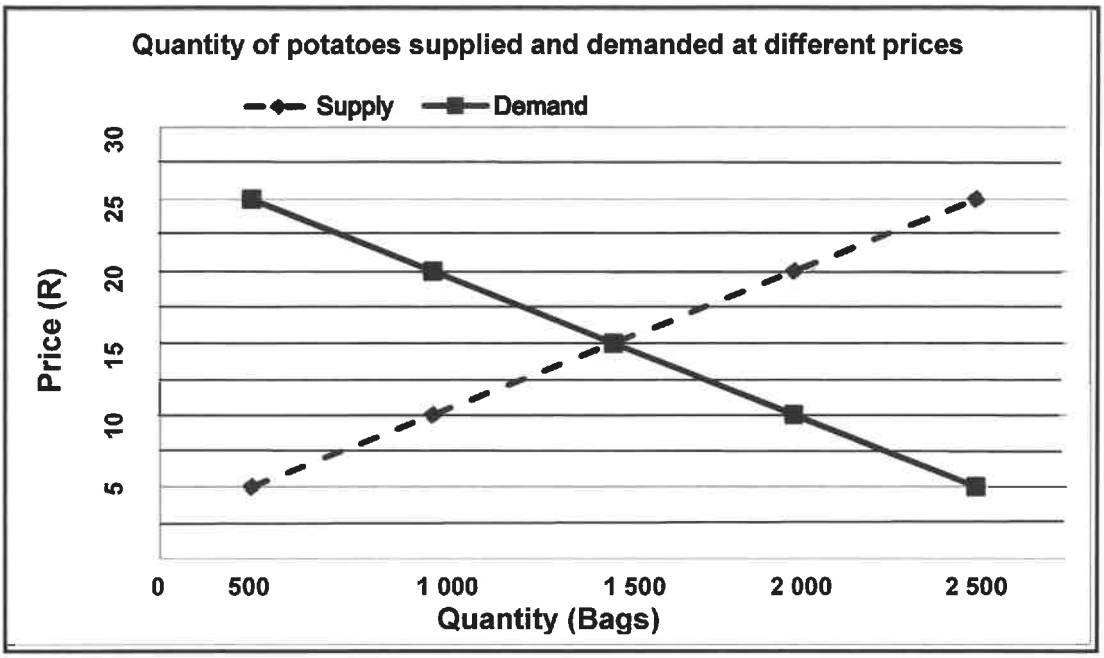
E Product identification ✓ (1)
F Containment ✓ (1)

2.1.3 TWO advantages of processing

- Increases the value of the product ✓
- A way of overcoming over-supply of product ✓
- Allows easier packaging, handling and transportation ✓
- Provides job opportunities ✓
- Enables the farmer to increase their share of final price paid for a product ✓
- Results in a product that has a longer shelf life ✓
- Reduces wastage of excess produce/prevent food spoilage ✓
- Improves food safety ✓
- Product is available throughout the year ✓ (Any 2) (2)

2.2 Supply, demand and price

2.2.1 Line graph



CRITERIA/RUBRIC/MARKING GUIDELINES

- Correct heading ✓
- X-axis: Correctly calibrated and labelled (Quantity) ✓
- Y-axis: Correctly calibrated and labelled (Price) ✓
- Correct units (Bags and R) ✓
- Line graph ✓
- Accuracy (80% + correct plotting) ✓ (6)

2.2.2 Law of supply

- The higher the price the more the quantities of potatoes supplied ✓✓
- The lower the price the lesser the quantities of potatoes supplied ✓✓ (Any 1) (2)

2.2.3 Condition in a market when the price is R15

Market equilibrium/equilibrium point ✓ (1)

2.2.4 **TWO factors influencing the demand of potatoes other than price**
- Quality ✓
- Consumer preferences/taste ✓
- Income/buying power of consumers ✓
- Number of consumers ✓
- Price of competing/complementary/substitutes products ✓
- Range of products available ✓
- Use of the product ✓
- Fashion ✓
- Festive seasons ✓
- Advertisement ✓
- Legislation ✓
- Sociological ✓
- Research ✓ (Any 2) (2)

2.3 **Approaches to agricultural marketing**

A Multi-segment ✓ (1)
B Green marketing ✓ (1)
C Niche marketing ✓ (1)

2.4 **Marketing channels of free marketing system**

2.4.1 **Identification of the marketing channel**
Internet/online marketing channel ✓ (1)

2.4.2 **TWO advantages of the internet marketing channel for the farmer**
- A large market can be reached/global reach ✓
- Money can be transferred before goods are delivered ✓
- Faster method to reach the consumers ✓
- Time saving/convenience ✓
- Cost effective/less capital intensive ✓
- Flexible/accessible anytime ✓ (Any 2) (2)

2.4.3 **TWO marketing channels other than internet marketing**
- Farm gate ✓
- Fresh produce ✓
- Stock sales/auctions ✓
- Direct/contact ✓ (Any 2) (2)

2.5 **Factors hampering marketing of agricultural products**

2.5.1 Bulkiness ✓ (1)
2.5.2 Costs for intermediaries/middlemen ✓ (1)
2.5.3 Perishability/spoilage ✓ (1)
2.5.4 Risk/delays/spoilage/theft ✓ (1)
2.5.5 Seasonal fluctuations ✓ (1)

2.6 **Entrepreneurial success factors**

2.6.1 B ✓ (1)
2.6.2 D ✓ (1)
2.6.3 C/D ✓ (1)
2.6.4 A ✓ (1)
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QUESTION 3: PRODUCTION FACTORS

3.1 **Land**

3.1.1 **Letter representing the functions of land**

(a) Provision of food - C ✓ (1)
(b) Provision of space for infrastructure - B ✓ (1)

3.1.2 **Economic characteristic of land**

A Land is limited ✓ (1)
D Value of land appreciates ✓ (1)

3.1.3 **TWO ways in which land productivity can be improved**

- Water management/provision/irrigation ✓
- Consolidating small uneconomical land units ✓
- Farming land more efficiently/precision farming/ use scientific farming methods ✓
- Improving soil fertility ✓
- Changing cropping practices ✓
- Restoring land potential ✓
- Responsible use of pesticides ✓ (Any 2) (2)

3.1.4 **The law of diminishing return**

With the continued addition of more of one input to a productive process while other inputs are kept constant, a point will be reached where the output per unit of the added input will decline ✓✓ (2)

3.2 **Labour productivity**

3.2.1 Motivation ✓ (1)
3.2.2 Education ✓ (1)
3.2.3 Recognition/motivation ✓ (1)
3.2.4 Communication ✓ (1)

3.3 Labour skills

3.3.1 Indication of the best candidate as

(a) Person to manage the business optimally - Candidate 2 ✓ (1)
(b) A technical advisor - Candidate 1 ✓ (1)

3.3.2 TWO reasons for the answer in QUESTION 3.3.1 (a)

- Higher scores/82% management skills/ability in management ✓
- Higher scores/80% interpersonal skills/ ability in interpersonal skills ✓ (2)

3.3.3 Legislation regulating

(a) Safety
Occupational Health and Safety Act/OHSA (No. 85 of 1993) ✓ (1)
(b) Participation in decision making
Labour Relations Act/LRA (No. 66 of 1995) ✓ (1)

3.4 Capital

3.4.1 Types of capital

(a) C ✓ (1)
(b) B ✓ (1)
(c) A ✓ (1)

3.4.2 ONE source of capital

Financial institution/commercial banks/trust companies/Land bank/ development bank/agricultural cooperatives/business partners/credit/ production/grants/inheritance/family and friends/savings ✓ (1)

3.5 Balance sheet for the 28th of February 2023

3.5.1 Identification of the financial statement

Balance sheet ✓ (1)

3.5.2 Provide the missing information for

(a) Value of the farm ✓ (1)
(b) Bank overdraft ✓ (1)
(c) R4 000 000 ✓ (1)
(d) R2 210 000 ✓ (1)

3.6 **Income and expenditure graph**

3.6.1 **Identification of a farmer with highest income**
Farmer B ✓ (1)

3.6.2 **Calculating the profit or loss for farmer A**
Profit or loss = Total value of income – Total value of expenditure ✓
= R30 000 – R50 000 ✓
= – R20 000/loss ✓ (3)

3.7 **Management**

3.7.1 **Management principles**
(a) Control ✓ (1)
(b) Implementation ✓ (1)

3.7.2 **TWO external forces that affect a farming business**
- Technological forces ✓
- Socio-cultural forces ✓
- Legal forces ✓
- Political forces ✓
- Ethical forces ✓
- Economic forces ✓
- Environmental forces ✓
- Competitive forces ✓ (Any 2) (2)

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QUESTION 4: BASIC AGRICULTURAL GENETICS

4.1 **Monohybrid crossing**

4.1.1 **Punnett square**

Gametes	B	b
b	Bb	bb
b	Bb	bb

CRITERIA FOR MARKING
- Gametes of parent 1 ✓
- Gametes of parent 2 ✓
- Genotype of offspring ✓
- Punnet square populated with gametes and offspring genotypes ✓ (4)

4.1.2 **Calculation of the percentage of pink flowers**
- = 2÷4 x 100 ✓
- = 50% ✓ (2)

4.1.3 **Calculate the number of heterozygous offspring**
- = 2÷4 x 350 ✓
- = 175 ✓ (2)

4.2 **Monohybrid crossing presentation**

4.2.1 **Pattern of inheritance shown by Pair 1**
Incomplete dominance/co-dominance ✓ (1)

4.2.2 **Justification for co-dominance/incomplete for pair 1**
The alleles for both parents are dominant ✓ (1)

4.2.3 **The phenotype of Pair 2 offspring**
All round fruits ✓ (1)

4.2.4 **Genotypic ratio of Pair 2 offspring**
1AA : 1Aa ✓ (1)

4.3 **Crossing schematic representation**

4.3.1 **Mendel law that applies in the crossing**
The law of segregation ✓ (1)

4.3.2 **The process that resulted to (7)**
Fertilization ✓ (1)

4.3.3 **Genotypes and phenotypes**
(a) **(2)** White ✓ (1)
(7) Dark ✓ (1)
(b) **(1)** DD ✓ (1)
(6) d ✓ (1)

4.4 **Variation**

4.4.1 **Genetic term**
Variation ✓ (1)

4.4.2 **TWO other internal factors**
- Mutation ✓
- Random fertilization ✓ (2)

4.4.3 **TWO methods of selecting farm animals**
- Progeny selection ✓
- Family selection ✓
- Pedigree selection ✓
- Mass selection ✓ (Any 2) (2)

4.5 **Crossbreeding Holstein cows with Dairy Swiss bulls**

4.5.1 **The breeding system**
Crossbreeding ✓ (1)

4.5.2 **Reason for crossbreeding**
Two different/unrelated breeds were used ✓ (1)

4.5.3 **TWO advantages of crossbreeding from the case study**
- An improvement in the growth rate of the calves ✓
- Offspring were better adapted to hot conditions ✓
- Udders and legs improved ✓

(Any 2) (2)

4.5.4 **Differentiation**
Inbreeding
Mating of animals that are related to one another ✓ (1)
Line breeding
Mating of animals that are closely related to an outstanding ancestor/ bull ✓ (1)

4.5.5 **ONE example for each of the breeding systems**
Inbreeding - Father and daughter/son and mother/brother and sister ✓ (1)
Line breeding - A bull with heifers from the second generation ✓ (1)

4.6 **Genetically modified organisms**

4.6.1 **TWO potential risks of genetically modified crops to the environment**
- Can produce super weeds ✓
- Insect resistant plants can kill beneficial insects ✓
- Use of excessive amounts of herbicides may damage the soil ✓
- Loss of biodiversity/useful plants can be destroyed ✓
- Reduce the effectiveness of herbicides/pesticides ✓

(Any 2) (2)

4.6.2 **TWO benefits of genetically modified crops**
- Environmental benefits ✓
- Health benefits ✓
- Economic benefits ✓

(Any 2) (2)
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TOTAL SECTION B: 105
GRAND TOTAL: 150